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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,538	12/28/2000	Stephen S. Ohr	H0001609(4960)	1429

7590

08/14/2002

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/752,538

Applicant(s)

OHR, STEPHEN S.

Examiner

Ishwar (I. B.) Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 04 June 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on May 4, 2002, paper No. 5.
These drawings are approved.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 7-9 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiley (US Patent 4,854,038).

Regarding claim 1 and 19, Wiley discloses a sublamination layer, comprising:

a single layer etched reference plane having a top surface and a bottom surface
(a copper sheet 2, see figure 1-4, column 3, line 20-40);

a first signal layer coupled to the top surface with a first bond-ply material (signal pattern 8 formed of copper sheet 4 and 5 bonded with bond film 6, see figure 3-4, column 3, line 20-40);

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a second signal layer coupled to the bottom surface with a second bond-ply material (signal pattern 8 formed of copper sheet 4 and 5 bonded with bond film 6, see figure 3-4, column 3, line 20-40); and

at least one of a through via (via 13, see figure 4, column 3, line 20-40).

Regarding claim 2, Wiley further discloses the reference plane comprises a metal (a copper sheet 2, see figure 1-4, column 3, line 20-40).

Regarding claim 3, Wiley further discloses the metal is copper (a copper sheet 2, see figure 1-4, column 3, line 20-40).

Regarding claim 4, Wiley further discloses the bond – ply material comprise the same material (bonding film 6, see figure 3-4, column 3, line 20-30).

Regarding claim 7-9, Wiley further discloses the use of sublamination as a printed circuit board and two or more of such sublamination used for printed circuit board as shown in figure 5 and 6.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5,6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiley (US Patent 4,854,038) as applied to claims 1-4,7-8 and 19 above, and further in view of Huang et al., US Patent No. 6,359,341, hereafter Huang.

Regarding claim 5, the applicant is claiming the bond ply material made of FR4 or cyanate ester. Though Wiley does not disclose use of FR4, use of FR4 as low cost dielectric material is known in the art. Further, Huang disclose using FR4 as dielectric material. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Wiley with FR4 as taught by Huang in order to get the desired dielectric characteristic. Further, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 6, though Wiley does not explicitly disclose the first and second bond-ply material do not comprise the same material. However, selecting the material for the insulating layer will depend upon various factors such as the degree of the insulation required to control the dielectric constant of individual layer and overall circuit board, the co-efficient of thermal expansion based on the vicinity to the component and the thickness allowed to get the above characteristics. Further, various bonding

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materials are known in the art and can be selected to get the desired thermal expansion value and insulation between the layers. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to supply the assembly of Wiley with the first and second bond-ply material not comprising the same material in order to get required insulation and expansion co-efficient value with lowest possible thickness to keep the final product small and economical. Further, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claim 20, though Wiley does not disclose explicitly disclose the relative thickness of the signal layer and the reference layer, the thickness of the reference layer depends upon the use of the reference plane and it is apparent to keep the reference plane thicker, if used as a power / ground layer to have low loss. Further, the applicant is not disclosing any specific reason or advantage / disadvantage of the thick or thin reference layer except to maintain the thickness as needed by the customer. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Wiley with the reference plane thicker than either the first or the second signal layer in order to have lower loss in the reference layer.

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Response to Arguments

6. Applicant's arguments filed June 4, 2002 have been fully considered but they are not persuasive. Though, Wiley does not disclose the reference plane formed by etching, the claimed structure is same as the prior art structure. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 698,227 USPQ 964, 966 (Fed. Circuit. 1985).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Japp et al., disclose a circuit board using cyanate ester and also the core plane with different material for controlling the CTE of the board.

Inoue et al., disclose a circuit board using Ni-Fe as core material.

Anstrom et al., disclose a multilayer circuit board signal and power layer.

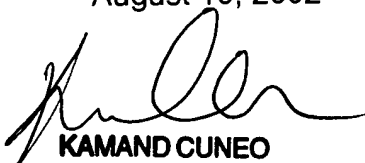
Brodksy et al., disclose a wiring board with at least one of the dielectric layers having modulus lower than the modulus of the remaining dielectric material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
August 10, 2002



KAMAND CUNEO
PRIMARY EXAMINER